CLAIMS

1) Apparatus for the reduction of the runout in the disk carrying flange (101) of the box (1) with internal bearings (3, 4) for the hub of the wheels of the motor vehicles, of the type comprising means for the axial pre-loading the internal crowns (4) of the bearings in such a manner that the workpiece is machined in the same conditions in which the same will be in the utilization phase, characterised by the fact that the axial pre-loading means (7, 107) of the internal crowns of the bearings are connected to the driver (9) for the driving in rotation of the box (1) with the flange (101) to be machined, while the internal crown (4) of the bearings which is opposed to the one directly interested by said pre-loading means, frontally rests on a surface (106) which is perpendicular to the same pre-loading means and means are provided to ensure a correct axial alignment of the workpiece with respect to said axial pre-loading means, with respect to said rest surface (106) and with respect of said driving means (9).

2) Apparatus according to claim 1), in which the pre-loading means (7, 107) are co-axially arranged inside of the driver (9) which in correct phase engages one end of the box (1) of the workpiece to be machined, to avoid the same to rotate or to drive in rotation around its axis.

3) Apparatus according to claim 1, in which means are provided to allow that the pre-loading means (7, 107) are relatively movable and independent with respect to the driver (9), both in the axial direction, and in rotation around the common axis, the said pre-loading means or at least their head (107) in contact with the workpiece to be machined, freely rotatable around their axis.

4) Apparatus according to claim 1) in which the centring means comprise a pin (306) arranged perpendicularly on the resting surface (106) of one of the internal crowns (4) of the bearings of the workpiece to be machined and such pin internally engages said crown (4) of the bearings in order to realize the required centring of the same workpieces with regard to the various operative components of the apparatus.

5) Apparatus according to claim 4) in which said pin (306) is provided with a head flaring which facilitates the coupling with the internal crown of the bearings.

6) Apparatus according to claim 4), in which said pin (306) is such to engage with precision the internal crown (4) of the bearings.

7) Apparatus according to claim 4), in which said pin (306) is such to engage with clearance the internal crown (4) of the bearings and is laterally provided with means (10) with radial and self-centring expansion and retraction movement, which usually are in the retracted rest position and that once the pin is inserted in the workpiece, are carried in expansion to contact the internal crown (4) of the bearings and to centre in correct manner the same workpiece, while leaving it free in the axial movement with respect to the pre-loading means (7, 107).

8) Apparatus according to claim 4, in which the flat surface (106) for the resting of the workpiece, with the relative pin (306) for the centring of the same workpiece, are connected to a mandrel (206) which may be fixed or upon command may rotate around its axis with under control of speed and phase control means.

9) Apparatus according to claim 1, in which means are provided in order to allow that the unit formed by the driver (9) and by the pre-loading pusher (7, 107) can, if required, act also as gripper for the manipulation of the workpiece for example for the discharge of the machined workpiece from the positioning station (6).

10) Apparatus according to claim 9, in which the positioning station (6) for the workpiece to be machined is arranged with its axis vertically and is oriented upwardly and all the operative members of the same apparatus are arranged with the axis vertically oriented, the unit formed by the driver (9) and by the pre-loading pusher (7, 107), assembled on a movable slide on orthogonal axis, which may carry other operative members, such for example the feelers for the runout of the workpiece, while the tool (2) is mounted on another slide movable on orthogonal axis, which can carry aboard the loading and unloading grippers of the workpieces to be machined and already machined.